

# GRADE 8

## STUDENT PRACTICE TEST BOOKLET

Student Name: \_\_\_\_\_



# MEA

Maine Educational Assessment

## RELEASED 2011 SCIENCE ITEMS

Maine Department of Education

# SCIENCE PRACTICE TEST

This practice session has twenty multiple-choice and two constructed-response questions.

Choose the best answer for each multiple-choice question and mark your answer choices for questions 1 through 20 in the spaces provided on page 2 of your practice test answer booklet.

- 1 Which objects in our solar system give off their own light?

A. only the Sun  
B. the Sun and the Moon  
C. the Sun, the Moon, and some planets  
D. the Sun, the Moon, some planets, and comets

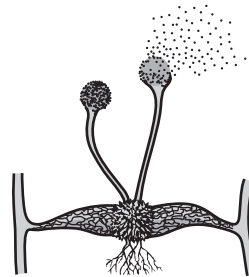
- 2 According to scientists, donkeys and horses share a common ancestor. Which evidence shows that the two organisms are related?

A. Both are tall.  
B. Both run fast.  
C. They have the same diet.  
D. They have the same bones in their limbs.

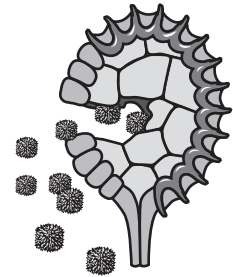
- 3 In Costa Rica a small tree, the acacia, provides shelter and food for ants. The ants protect the acacia by removing other insects and vines that might harm it. Which term **best** describes the relationship between the acacia and the ants?

A. competition  
B. mutualism  
C. parasitism  
D. predation

- 4 The diagram below shows a structure of a fungus and a structure of a fern.



Fungus



Fern

What is the function of these structures?

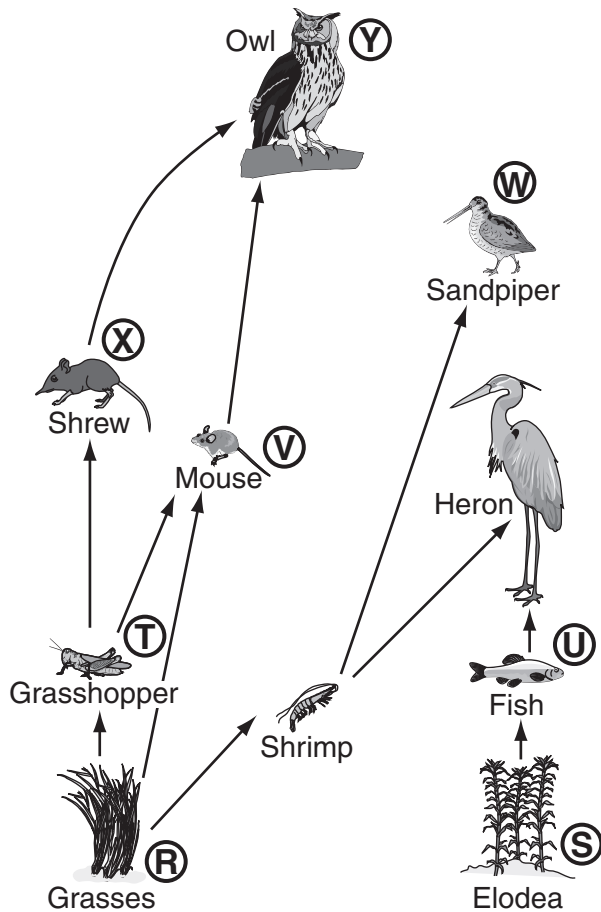
A. defense  
B. movement  
C. photosynthesis  
D. reproduction

- 5 Penicillin is a drug that kills bacteria. Today, many bacteria are resistant to this drug. How does natural selection **best** explain this observation?

A. Penicillin causes some bacteria to mutate.  
B. Some bacteria survive penicillin and reproduce.  
C. Resistant bacteria cannot be attacked by penicillin.  
D. Resistant bacteria mutate more quickly than normal bacteria.

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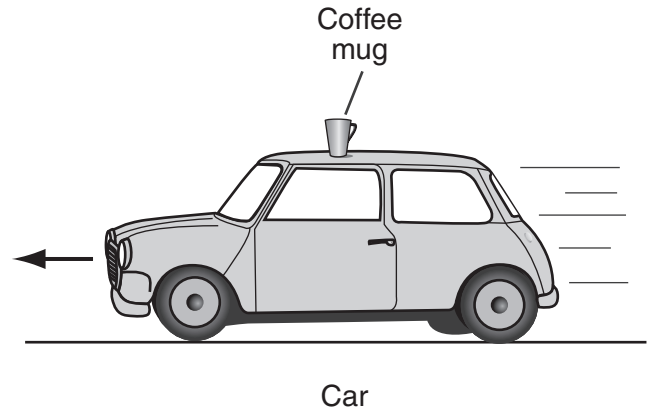
- 6 The diagram below shows a tidal marsh food web.



At which points does energy enter this tidal marsh food web?

- A. R and S
  - B. T and U
  - C. V and W
  - D. X and Y
- 7 Which of the following is the farthest from Earth?
- A. Halley's comet
  - B. the Andromeda galaxy
  - C. Neptune
  - D. the Sun

- 8 A teacher leaves a coffee mug on top of a car, as shown in the diagram below.

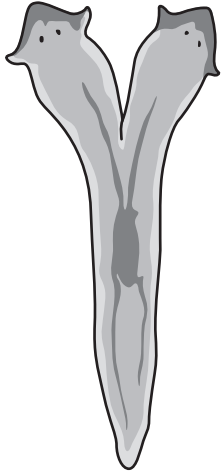


The teacher drives the car in a straight line and then stops suddenly. What happens to the coffee mug when the car stops?

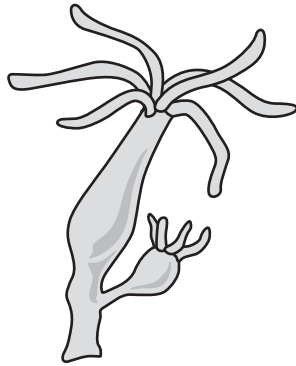
- A. The mug moves forward.
  - B. The mug moves backward.
  - C. The mug moves side to side.
  - D. The mug stays in the same position.
- 9 Earth has a limited supply of fresh drinking water. Which method is used to recycle water for humans to use?
- A. bottling water
  - B. dam construction
  - C. collecting rainwater
  - D. wastewater treatment

PLEASE GO ON ➡

- 10 The diagrams below show a planarian reproducing by splitting in two and a hydra reproducing by budding.



Planarian



Hydra

Which of the following do the new planarian and hydra have in common with the original planarian and hydra?

- A. The fertilization occurs externally.
  - B. The egg and sperm are united.
  - C. The offspring of each organism has similar but slightly different genes.
  - D. The offspring of each organism is identical to its parent.
- 11 Which observation demonstrates that light waves travel much faster than sound waves?
- A. An exploding firework is seen before it is heard.
  - B. Light from the Sun takes eight minutes to reach Earth.
  - C. Thunder can be heard before lightning is seen.
  - D. A returning echo is heard after a split-second delay.
- 12 The map below shows Labrador and England.



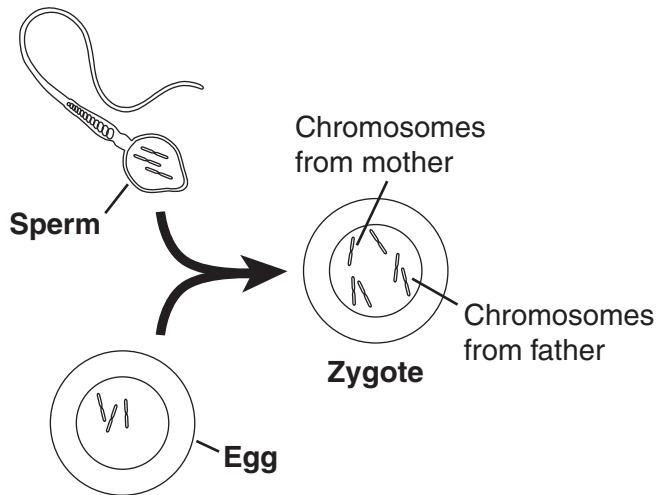
What is the **most likely** reason that England is warmer than Labrador?

- A. A warmer ocean current flows nearer to England than to Labrador.
- B. More people live in England than in Labrador.
- C. Labrador receives less sunlight than England.
- D. Labrador has more glaciers than England.

- 13 By inserting a gene into crop plants, scientists have developed plants that are resistant to insects. If an insect eats the plant, the insect dies. Which practice is unnecessary with this new plant variety?
- A. eroding the land by tilling
  - B. overproducing food crops
  - C. removing weeds from crops
  - D. spraying plants with pesticides

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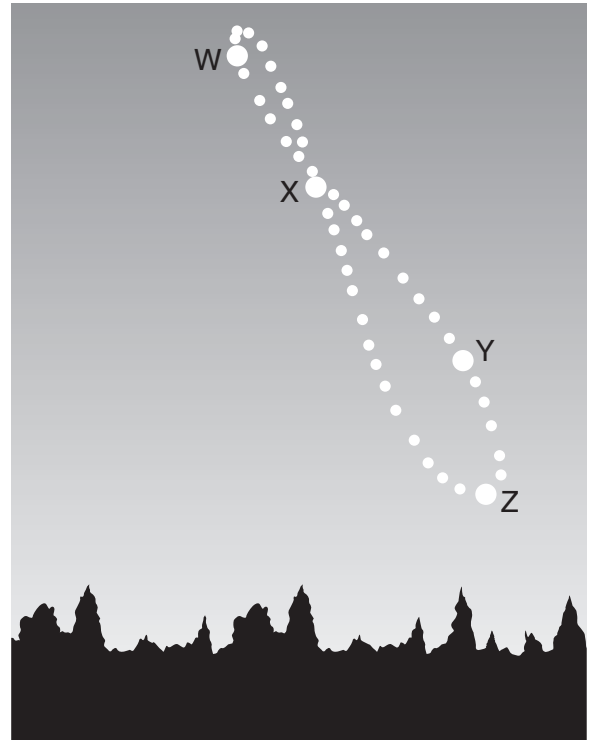
- 14 The diagram below shows the formation of a zygote from an egg and a sperm. Chromosomes carry genetic information.



Which reproduction concept does the diagram show?

- A. All the genetic information in a zygote is from one parent.
  - B. All the genetic information in sperm is from both parents.
  - C. Fertilization ensures that traits are inherited from both parents.
  - D. Fertilization results in a reduced number of chromosomes.
- 15 Which process is the **best** example of a sudden change to Earth's surface?
- A. landslides moving loose rocks downhill
  - B. sediments depositing on the seafloor
  - C. deltas forming at the mouth of rivers
  - D. mountains building up

- 16 The picture below shows an analemma, which appears as a figure eight. An analemma is produced by photographing the Sun's position at noon from the same place throughout the year.

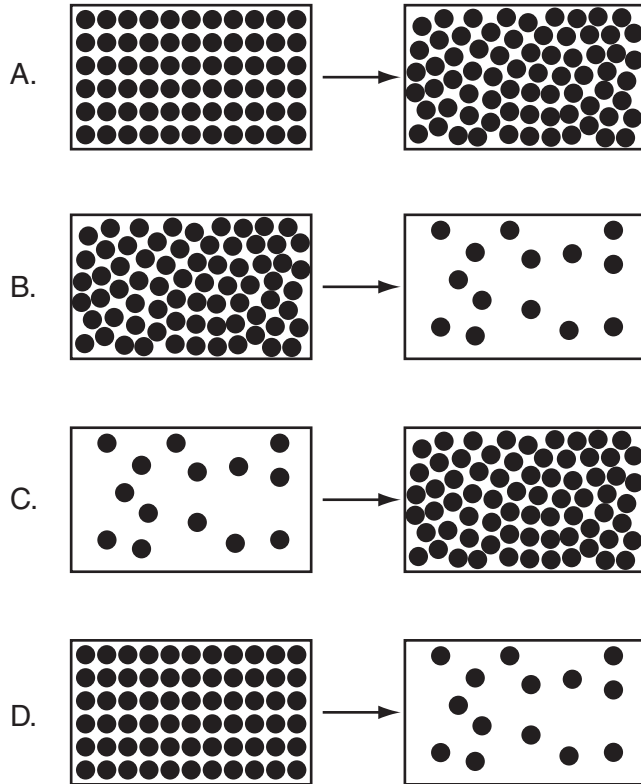


Which position indicates the time of year with the **greatest** amount of sunlight?

- A. position W
- B. position X
- C. position Y
- D. position Z

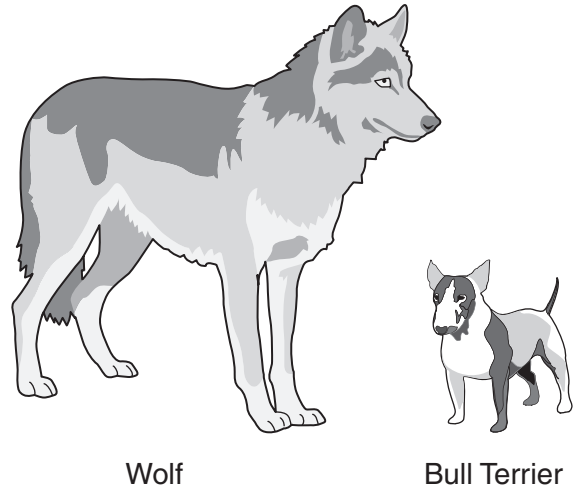
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- 17 Which diagram represents the change of ice to water?



- 18 Frogs often sit on the leaves of water lilies looking for insects to catch. What is the **best** description of the interaction between frogs and water lilies?
- A. neutral effect for frogs and positive effect for water lilies
  - B. negative effect for frogs and negative effect for water lilies
  - C. positive effect for frogs and neutral effect for water lilies
  - D. positive effect for frogs and negative effect for water lilies

- 19 The wolf is the ancestor of the many species of dogs. The pictures below show a wolf and a bull terrier.



How did smaller dogs like bull terriers **most likely** evolve from wolves?

- A. A small bull terrier-sized puppy was born to a wolf.
- B. The smallest wolf puppies were bred together over many generations.
- C. Wolves were fed less and did not grow as large.
- D. Wolf puppies were kept in the puppy stage so they did not grow large.

PLEASE GO ON ➡

- 20 The Periodic Table of the Elements is shown below.

Periodic Table																	
1 1A H																	18 0 He
2 2A												13 3A B	14 4A C	15 5A N	16 6A O	17 7A F	
Li	Be											Al	Si	P	S	Cl	Ar
Na	Mg	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B				11 1B	12 2B					
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Unq	Unp	Unh	Uns	Uno	Une									

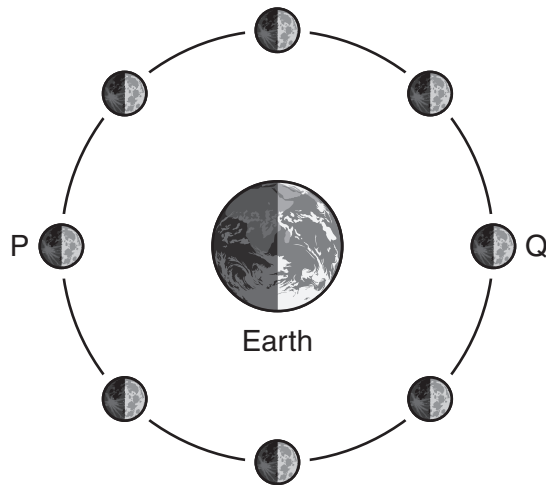
Cesium (Cs), the circled element, is a highly reactive metal. Which elements have a reactivity similar to cesium?

- A. barium (Ba) and radon (Rn)
- B. silver (Ag) and cadmium (Cd)
- C. sodium (Na) and potassium (K)
- D. strontium (Sr) and radium (Ra)

PLEASE GO ON ➡

Write your answers to constructed-response questions 21 and 22 in the boxes provided on pages 2 and 3 of your practice test answer booklet. Be sure to answer and label all parts (a, b, c, etc.) of the questions.

- 21 The diagram below shows different phases of the Moon.



- Describe the Moon's phases as seen from Earth when the Moon is at positions P and Q.
  - Explain why the Moon has different phases.
- 22 The parts within a single-celled organism, such as paramecium, euglena, or amoeba, do jobs similar to those done by organs and organ systems in humans.
- Identify **two** parts within a single-celled organism.
  - Describe the job that **each** part does.
  - Identify the organ or organ system in a human that performs the same jobs you described in part b.

